

WHAT IS CLAIMED IS:

1. A planographic printing plate precursor comprising:
a substrate;
a photosensitive layer disposed on the substrate, the photosensitive layer including a light-to-heat conversion agent and a compound, which is at least one of crosslinkable and polymerizable, with solubility of the photosensitive layer in an alkali developing solution being decreased by the effect of at least one of light and heat; and
an overcoat layer including a polymer, which is hydrophobic and soluble in an aqueous alkali solution.
2. The planographic printing plate precursor according to claim 1, wherein the overcoat layer is formed on the photosensitive layer.
3. The planographic printing plate precursor according to claim 1, wherein the overcoat layer does not have sensitivity to exposed laser.
4. The planographic printing plate precursor according to claim 1, wherein the hydrophobicity is expressed by a contact angle with water of at least 30 degrees.

5. The planographic printing plate precursor according to claim 1, wherein the hydrophobicity is expressed by a contact angle with water of at least 50 degrees.

6. The planographic printing plate precursor according to claim 1, wherein the aqueous alkali solution-soluble polymer comprises at least one kind of minimum constituent unit including at least one acidic group selected from a group consisting of a phenolic hydroxyl group, sulfonamide group, substituted sulfonamide-based acidic group, carboxylic acid group, sulfonic acid group, and phosphoric acid group.

7. The planographic printing plate precursor according to claim 6, wherein the acidic group has a pKa of no more than 14 and the functional group content in a polymer has an equivalence of 0.1 to 12 mmg/g.

8. The planographic printing plate precursor according to claim 1, wherein the aqueous alkali solution-soluble polymer is a copolymer comprising at least 10 mol% of a compound including at least one acidic group selected from the group consisting of a phenolic hydroxyl group, sulfonamide group, substituted sulfonamide-based acidic group, carboxylic acid group, sulfonic acid group, and phosphoric acid group.

9. The planographic printing plate precursor according to claim 1, wherein the aqueous alkali solution-soluble polymer has a weight-average molecular weight of 5,000 to 300,000, a number-average molecular weight of 800 to 250,000 and a dispersion degree of from 1.1 to 10.

10. The planographic printing plate precursor according to claim 1, wherein the overcoat layer comprises 30 to 99% by weight of the aqueous alkali solution-soluble polymer.

11. The planographic printing plate precursor according to claim 1, wherein the photosensitive layer is a photopolymerization layer comprising an infrared ray absorbing agent, a radical generating agent, and a radical polymerizable compound which polymerizes with the generated radicals and cures.

12. The planographic printing plate precursor according to claim 11, wherein the radical generating agent is at least one onium salt.

13. The planographic printing plate precursor according to claim 12, wherein the onium salt is at least one onium salt selected from a group consisting of an iodonium salt, diazonium salt, and sulfonium salt, and has a maximum absorption of 400 nm or less.

14. The planographic printing plate precursor according to claim 1, wherein the photosensitive layer is an acid crosslinking layer comprising: a compound, which generates acid by being exposed by at least one of light and heat; a crosslinking compound, which crosslinks by the generated acid; and an alkali-soluble polymer, which reacts with the crosslinking agent in the presence of an acid.

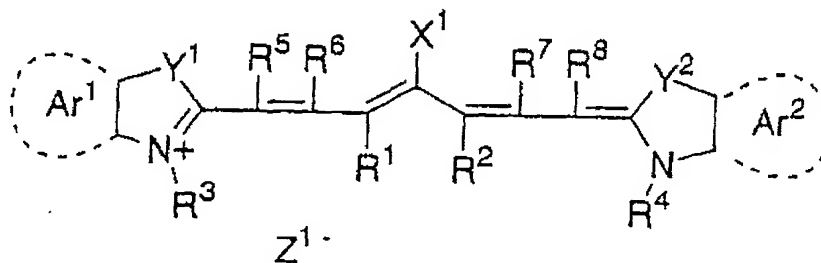
15. The planographic printing plate precursor according to claim 14, wherein the compound which generates acid by at least one of being irradiated with light having a wavelength of 200 to 500 nm or by being heated to at least 100°C.

16. The planographic printing plate precursor according to claim 14, wherein the crosslinking compound is at least one crosslinking compound selected from a group consisting of: aromatic compounds substituted with at least one of hydroxymethyl group and alkoxymethyl group; compounds comprising at least one of N-hydroxymethyl group, N-alkoxymethyl group, and N-acyloxymethyl group; and, epoxy compounds.

17. The planographic printing plate precursor according to claim 1, wherein the light-to-heat conversion agent is an infrared ray absorbing agent having maximum absorption at a wavelength of from 760 nm to 1200 nm.

18. The planographic printing plate precursor according to claim 1, comprising a cyanine dye represented by general formula (I) as the light-heat conversion agent:

General formula (I)



wherein, X^1 represents one of a halogen atom, X^2-L^1 and NL^2L^3 ; X^2 represents one of an oxygen atom and a sulfur atom; L^1 represents a hydrocarbon group having from 1 to 12 carbon atoms; L^2 and L^3 each independently represents a hydrocarbon group having from 1 to 12 carbon atoms; and R^1 and R^2 each independently represents a hydrocarbon group having from 1 to 12 carbon atoms.

19. The planographic printing plate precursor according to claim 1, wherein a substrate is selected from a polyester film and an aluminum plate.

20. The planographic printing plate precursor according to claim 1, comprising at least one layer selected from a group consisting of an undercoat layer, an intermediate layer, and a backcoat layer.